A RECIPE FOR A HELICAL WHIP FOR MOBILE OPERATION

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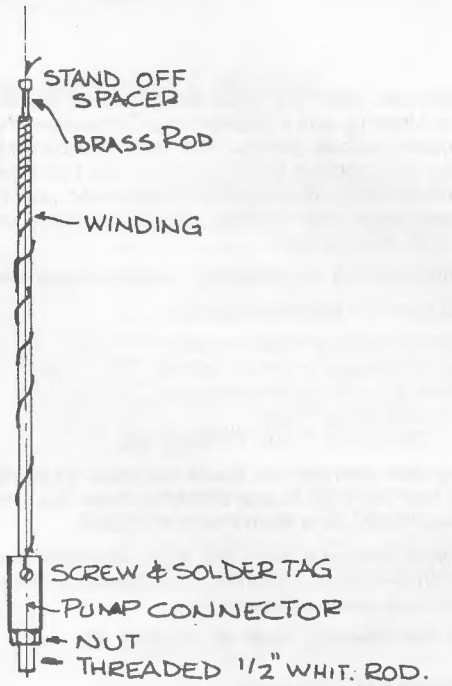

INGREDIENTS

1 brass spacer 8 mm long and 5 mm in diameter

1 piece 8# brass welding rod 120 mm long
1 electric fence strainer (as sold, 1500 mm length of 10 mm fibreglass rod)

1 reel 16# enamelled copper wire

1 windmill pump coupling (as sold, cylindrical brass 20 mm OD ready drilled and threaded to take ½" Whitworth rod)

1 55 mm length of ½" Whitworth brass or steel rod
1 steel or brass ½" Whitworth nut
1 8# or larger self-tapping screw

1 solder tag to fit screw

1 roll of PVC tape
5 minute Epoxy

METHOD

Drill into end of fibreglass rod 20 mm, dip welding rod tip in Epoxy and tap into end of rod.
Tin tip of welding rod and sweat on brass spacer.

Screw 55 mm length of threaded rod into pump coupling to depth of 30 mm and fit locknut. Tighten locknut.
Epoxy other end of fibreglass rod into pump coupling to a depth of 30 mm. Set aside till set.

Drill into brass coupling at right angles to fibreglass rod 20 mm from fibreglass. Screw in self-tapping screw with washer and solder tag. Tighten.
This completes the whip, which now has to be wound and tuned.

WINDING

Tin end of enamelled copper wire and solder to brass welding rod close to fibreglass section of whip.
Close-wind to length required, then space- wind increasing spacing to bottom of rod.
Bare end of copper wire and solder to solder- tag.
Check for frequency, and adjust by adding or subtracting turns if there is a large discrepancy, or by heating and sliding the brass spacer on the end of the rod up or down to make adjustments of 20 kHz or so. Allow for lowering of frequency of about 20 kHz when the whip is taped.
Tape the rod from the top of the winding down over the brass base so that the solder tag and screw are covered.
Recheck and readjust by moving the brass spacer if necessary.

NOTES

1. Rough checking for frequency can be done by mounting on car and coupling to a general coverage receiver, tuning across the range required. The whip is fairly sharp and an increase in noise can be heard as the receiver is tuned across the resonant frequency of the whip. If it appears that frequency is within the amateur band, use an SWR bridge to fine tune.

2. If difficulty is encountered in finding the resonant frequency of the whip, make up a loop on a PL259 plug and use this to couple a GDO into the base of the antenna when mounted in position on car.

3. The winding lengths given were for a standard base 70 mm high with mounting spring 120 mm high. If no spring is used the ½" Whitworth rod and nut should be omitted and the length of winding increased to make up the inductance of the spring. The windmill coupling will screw straight down onto the standard heavy duty base.

4. The brass spacer on the end of the whip is an important item. Do not leave it off. It not only allows for easy fine-tuning of the frequency of the whip, but it also prevents corona effects and arcing at the end of the whip. These can not only burn up the tip of the whip, but will cause TVI and BCI.

LENGTH OF WINDING

20 metres: Close wind for 290 mm, then space wind starting at about 20 mm, increasing to 100 mm at base of whip.

80 metres: (use 15 mm fibreglass rod glued into a hexagonal windmill pump coupling — these are reducing 5/16" to ½"). Close wind for 1035 mm, and then space wind as before. If 10 mm fibreglass rod is used as for the other bands, more turns will be required. Try an extra 250 mm for a start.

40 metres: Close wind for 750 mm, and them space wind as for 20 metres.

The whips were made in a very short time, and cost less than $10 to make. The fencing strainers and windmill couplings were purchased for about $3 each from a farm hardware store.